



TITLE:

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CITATION:

Utinomi, Huzio. FLESHY ALCYONARIANS FROM SOUTHERN FORMOSA. PUBLICATIONS OF THE SETO MARINE BIOLOGICAL LABORATORY 1959, 7(3): 303-312

ISSUE DATE:

1959-12-20

URL:

<http://hdl.handle.net/2433/174638>

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FLESHY ALCYONARIANS FROM SOUTHERN FORMOSA¹⁾

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With 4 Text-figures

For a month from May to July, 1938, about twenty years ago, I made a collecting trip to Formosa (Taiwan) for investigating the coral reefs and littoral fauna, especially to collect the cirripeds and alcyonarians. A general sketch of the coastal fauna of southern Formosa was already given in HIRO (1939a), and the systematic and ecological accounts of the cirripeds were also given in HIRO (1939b).

In this paper is given only a systematic list of the fleshy alcyonarians collected mainly on the southern coasts of Formosa between 7th and 16th of June, 1938. Among them, some of the most interesting forms were described in detail in three former papers (UTINOMI, 1950a, 1950b and 1951).

This study was supported by a grant-in-aid from the Japan Society for the Promotion of Scientific Research. I am indebted to Dr. Katura OYAMA for information on the homonymies of *Sphaerella*.

I. List of the Alcyonarian Collection from Formosa

STOLONIFERA

Family Clavulariidae HICKSON

1. *Clavularia racemosa* UTINOMI, 1950

Occurrence: Kizan near Suô, northeastern coast of Formosa. June 29, 1938.

Found on the root of a green alga *Caulerpa racemosa* var. *clavifera* WEBER VAN BOSSE (UTINOMI, 1950b, p. 44).

Previously recorded also from southern Japan (type locality—Tanabe Bay, Kii Province) (UTINOMI, 1950b).

2. *Clavularia inflata* SCHENK, 1896

Occurrence: Daizyubô, southern end of Formosa. June 14, 1938.

1) Contributions from the Seto Marine Biological Laboratory, No. 336.

Luxuriant on dead coral blocks and rock in shallow tide-pools. In life, the rigid anthosteles, about 25–30 mm long, are brownish yellow and the fully expanded anthocodiae pale brownish in color.

Previously recorded from Great Barrier Reef (MACFADYEN, 1936), East Indies (SCHENK, 1896; THOMSON and DEAN, 1931 as *Hicksonia kollikeri* DEAN), Philippines (MAY, 1900; ROXAS, 1933a, as *Clavularia inflata* var. *luzoniana* MAY), Tokara Islands (UTINOMI, 1953) and Ponape Island, Caroline group (UTINOMI, 1956).

3. *Pachyclavularia violacea* (QUOY & GAIMARD, 1833)

Occurrence: Daizyubô, southern end of Formosa. June 14, 1938.

Luxuriant in shallow tide-pools. The colonies of extraordinary appearance are bright reddish purple in colour. In life, the color of the anthocodiae fully extended is ocher red, though pale cinnamon pink around the central mouth. The neck portion below the tentacles extended out of the red anthostelar portion is only brownish.

Previously recorded from Vanikoro, Santa Cruz Islands (type locality) (QUOY & GAIMARD, 1833 as *Clavularia violacea*), East Indies (ROULE, 1908; THOMSON & DEAN, 1931, as *Pachyclavularia erecta* ROULE), Philippines (ROXAS, 1933 a, as *P. erecta*), Great Barrier Reef (MACFADYEN, 1936, as *P. erecta*) and Titizima, Bonin Islands (UTINOMI, 1956). For synonymies see GOHAR, 1940.

Family Tubiporidae GRAY

4. *Tubipora musica* LINNAEUS, 1758

Occurrence: Garanbi, southernmost cape of Formosa. June 13, 1938.

Overgrown on coral shingles in tide-pools. This well-known "organ-pipe coral" is very common around the fringing reefs of southern Formosa, but the color of living polyps when expanded may mislead its occurrence there, since the tentacles are apparently either pale cinnamon pink, olive yellow or glaucous green and the polyp stalk brown uniformly (according to my field note).

Widespread in all tropical Indo-Pacific Ocean from Red Sea to Australia.

ALCYONACEA

Family Xenidiidae VERRILL

5. *Anthelia formosana* UTINOMI, 1950

Occurrence: Garanbi, southernmost cape of Formosa. June 13, 1938.

Luxuriant in tide-pools under the light house. When alive, they are uniformly bluish white, basal membrane spreading over sponges or other solid substratum with numerous, non-pulsating, polyps close together (UTINOMI, 1950a, p. 82).

6. *Heteroxenia elisabethae* KÖLLIKER, 1875

Occurrence: Garanbi, southernmost cape of Formosa. June 13, 1938.

Abundant in tide-pools south and west of the light house (UTINOMI, 1950a, p. 85).

Previously recorded from East African coast, Great Barrier Reef, East Indies, Philippines (HICKSON, 1931; ROXAS, 1933a).

7. *Cespitularia stolonifera* GOHAR, 1938

Occurrence: Garanbi, southernmost cape of Formosa. June 12, 1938.

A large branched colony was found in a tide-pool south of the light house. *Caphyra*- or *Lissocarcinus*-like small crabs were found commensally between polyps (UTINOMI, 1950a, p. 90).

Previously recorded from Amboina by WRIGHT & STUDER (1889) as *Xenia elongata* DANA (cf. GOHAR, 1938, p. 483).

Family Asterozoniidae UTINOMI

8. *Asterozonia laurae* UTINOMI, 1951

Occurrence: Daizyubô. June 14, 1938.

This unique alcyonarian with stellate spicules alone is seemingly a branched colony with a few mushroom-like lappets covered by a number of monomorphic polyps lacking pinnules on tentacles (UTINOMI, 1951).

Family Alcyoniidae LAMOUROUX

9. *Sinularia polydactyla* (EHRENBERG, 1834)

(Fig. 1, a-b)

Occurrence: Ryûkyûsyô (Lambay Island). June 8, 1938.

Growing to large size, brown or gray in color, with stout laterally flattened lobes. Widely distributed in Indo-Westpacific tropical shallow waters.

10. *Sinularia mayi* LÜTTSCHWAGER, 1915

(Fig. 1, c-e)

Occurrence: Daizyubô. June 14, 1938.

Abundant on reef edges. Colonies rather low (about 7 cm high in alcohol specimens), grayish white in color. In one colony a gastropod *Rapa rapa* (LINNAEUS) was found as embedded wholly in the bark of the stalk.

Previously recorded from East Indies, Philippines (LÜTTSCWAGER, 1915; ROXAS, 1933b) and Indochina (TIXIER-DURIVAUT, 1945).

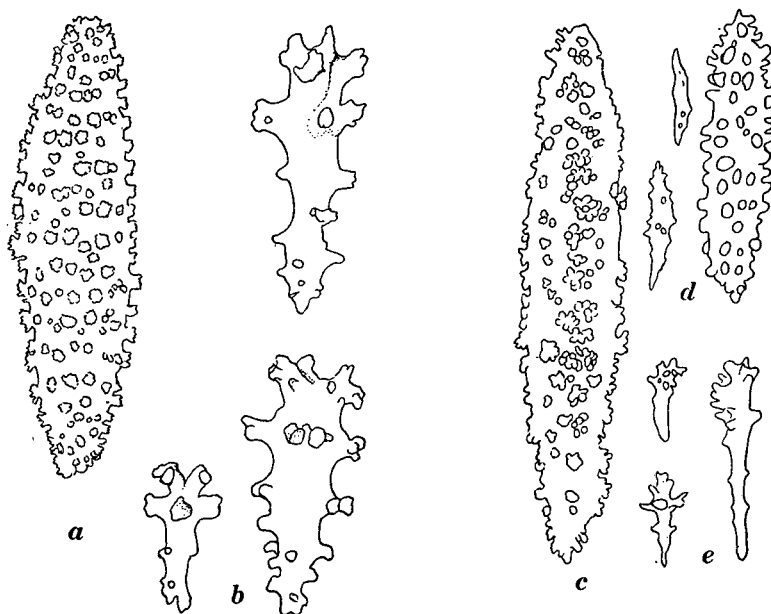


Fig. 1. *a-b. Sinularia polydactyla* (EHRENBERG).
a, coenenchymal spicule; *b*, cortical spicules.
c-e. Sinularia mayi LÜTTSCWAGER.
c, d, coenenchymal spicules; *e*, cortical spicules.
 (*a, c, d*×18; *b*×150; *e*×75)

11. *Sarcophyton ehrenbergi* MARENZELLER, 1886

Occurrence: Daizyubô. June 14, 1938.

One colony with feebly folded cup-shaped disc, about 6 cm across, was collected. Widely distributed in tropical Indo-Westpacific waters (TIXIER-DURIVAUT, 1958).

12. *Sarcophyton acutangulum* (MARENZELLER, 1886)

Occurrence: Daizyubô. June 14, 1938.

One colony with the disc, 3.5 cm×5.4 cm in size, strongly folded into high folds slightly projecting from the stalk, was collected. Autozooids in the center of the disc are as usual raised as mounds and about 3 mm apart.

Widespread in tropical Indo-Westpacific, as far north as Kii coast of southern Japan (UTINOMI, 1954a, 1956).

13. *Sarcophyton moseri* ROXAS, 1932

Occurrence: Daizyubô. June 14, 1938.

One small colony with 3 cm high stalk and unfolded disc, about 2.2 cm×3.2 cm in size, was collected.

Previously recorded from Philippines (ROXAS, 1932, 1933b), New Caledonia (TIXIER-DURIVAUT, 1946, 1958) and Tokara Islands, southern Japan (UTINOMI, 1953).

14. *Sarcophyton glaucum* (QUOY & GAIMARD, 1833)

(Fig. 2)

Occurrence: Daizyubô. June 14, 1938.

Ryûkyûsyô. June 7, 1938.

Common in shallow waters near reef edges.

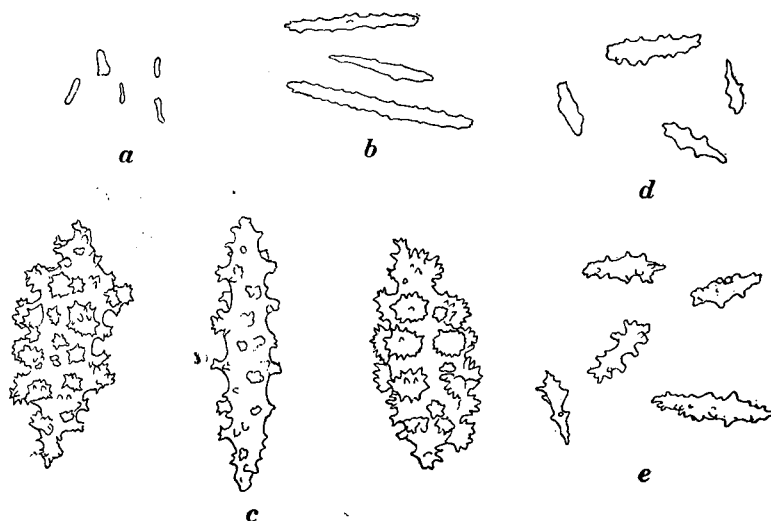


Fig. 2. *Sarcophyton glaucum* (QUOY & GAIMARD).

a, tentacle spicules; *b*, coenenchymal spicules of capitular disc; *c*, coenenchymal spicules of stalk; *d*, cortical spicules of capitular disc; *e*, cortical spicules of stalk. (All ×100)

Largest one among many specimens brought home measures about 10 cm across and 5 cm high in alcohol.

Widespread in tropical Indo-Westpacific (MOSER, 1919, p. 253; TIXIER-DURIVAUT, 1958). Not ever found in Japan proper.

15. *Sarcophyton tropheliophorum* (MARENZELLER, 1886)

Occurrence: Daizyubô. June 14, 1938.

Common on reef edges. In one specimen collected there, the disc is 3 cm×4 cm in size and strongly convoluted at margins into 8 thick main folds.

Widespread in the Indo-Westpacific, as far north as Tokara Islands (UTINOMI, 1953, p. 231; TIXIER-DURIVALT, 1958).

16. *Cladiella sphaerophora* (EHRENBERG, 1834)

(Fig. 3)

Occurrence: Daizyubô. June 14, 1938.

Two small cerebriiform grayish white colonies were collected. One of them figured here is 29 mm×33 mm in size and 15 mm in height. Its basal attachment is 15 mm×20 mm and flattened.

Polyps are very minute, thickly set on roundly constricted lobes, and they are about 0.5–0.7 mm apart. Cortical spicules are tuberculate capstans with distinct

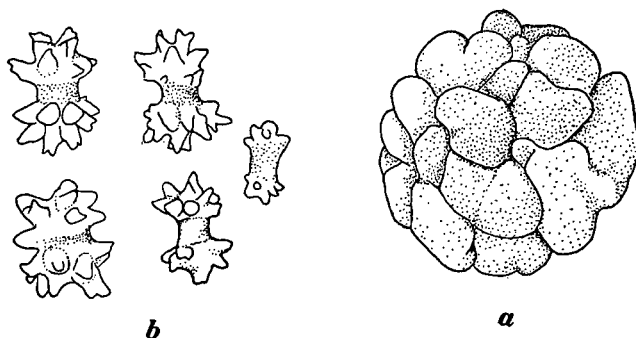


Fig. 3. *Cladiella sphaerophora* (EHRENBERG).

a, compressed colony, upper view; *b*, cortical spicules of lobes.
(*a*×1; *b*×150)

median waist and covered by many rounded tubercles. They are about 0.07–0.09 mm long and 0.04–0.05 mm wide. Besides, smaller discs, about 0.02 mm×0.04 mm, are found.

Previously recorded from Red Sea (EHRENBERG, 1834; KLUNZINGER, 1877; TIXIER-DURIVALT, 1948), Madagascar, Seychelles, East African coast, Tahiti, East Indies and Bonin Islands (UTINOMI, 1956).

17. *Cladiella pachyclados* (KLUNZINGER, 1877)

Occurrence: Daizyubô. June 14, 1938.

Common on reef edges. Colonies grayish in color, with low finger-like lobes not so much compressed as in *C. sphaerophora*.

Widespread in Indo-Westpacific tropical waters (KLUNZINGER, 1877; MACFADYEN, 1936; TIXIER-DURIVAUT, 1948).

Family Nephtheidae VERRILL

18. *Paralemmalia thyrsoides* (EHRENBERG, 1834)

Occurrence: Garanbi. June 12, 1938.

Two fine colonies, brownish in life, with retractile polyps all over the finger-like lobes up to 6 cm long, were collected.

Previously recorded from Red Sea, Indian Ocean, East Indies, Philippines, Great Barrier Reef and Palau Islands (UTINOMI, 1956).

19. *Nephthea erecta* KÜKENTHAL, 1903

Occurrence: Daizyubô. June 14, 1938.

Previously recorded from Tonga Islands, East Indies, Philippines and Kii coast, southern Japan (UTINOMI, 1954b).

COENOTHECALIA

Family Helioporidae MOSELEY

20. *Heliopora coerulea* (PALLAS, 1766)

Occurrence: Daizyubô. June 14, 1938.

Only a dead fragment of the colony was obtained.

Widespread in tropical Indo-Westpacific, as far north as Tokara Islands, southern Japan (UTINOMI, 1953, 1956).

GORGONACEA

SCLERAXONIA

Family Briareidae GRAY

21. *Solenopodium marquesarum* (KÜKENTHAL, 1916)

(Fig. 4)

Occurrence: Daizyubô. June 14, 1938.

A hump-shaped colony with a hollow center was collected. It is about 3 cm long and 3.5 cm wide. The outer surface is dull grayish brown, while the inner surface is beautifully violet. The outer cortical spicules are all colorless tuberculate spindles, while those of the inner medulla are violet-colored, more slender spindles or irregularly branched forms.

This species was originally assigned to the genus *Erythropodium* (KÜKENTHAL, 1916, 1919 and 1924), but later transferred to the genus *Solenopodium* by MOLANDER (1929, p. 39), AURIVILLIUS (1931, p. 9), MACFADYEN (1936, p. 67) and STIASNY (1937,

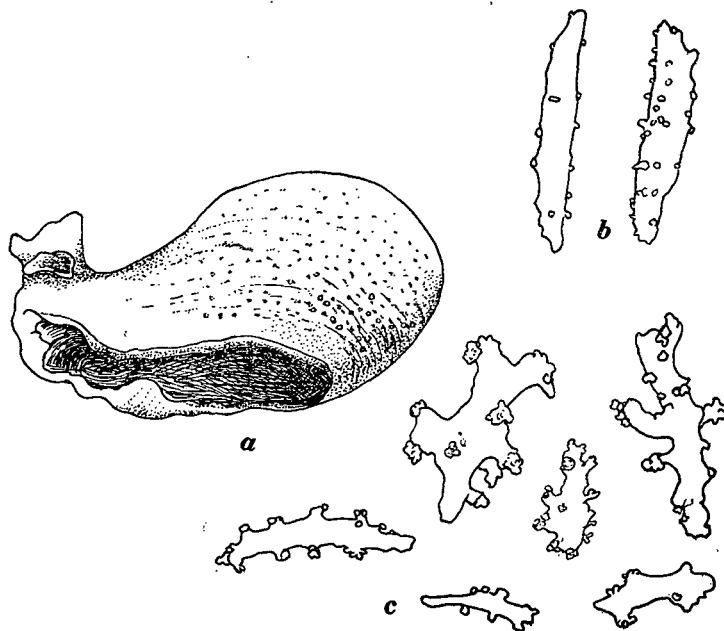


Fig. 4. *Solenopodium marquesarum* (KÜKENTHAL).

a, hump-shaped colony; *b*, cortical spicules of outer layer, colorless;
c, cortical spicules of inner layer, violet colored. (*a* $\times 1$; *b*, *c* $\times 60$)

p. 15), though the former three authors consider as an encrusting form of the more branched cylindrical species *S. stechei* (KÜKENTHAL).

Previously recorded from Marquesas Islands, Timor and Low Isles (STIASNY, 1937, pp. 9-19).

II. Proposal of using GRAY's *Cladiella* instead of his *Sphaerella*

For the Indo-Pacific encrusting alcyoniids having exclusively very small capstan-formed spicules and minute finger-biscuit-like discs in the coenenchymes BAYER (1955, p. 207) proposed to adopt the oldest genus name *Sphaerella* (GRAY, 1869, p. 122; genotype—*Alcyonium tuberculatum* QUOY & GAIMARD), because the name was earlier erected than *Microspicularia* MACFADYEN (1936, p. 28; genotype—*Alcyonium pachyclados* KLUNZINGER). TIXIER-DURIVAUULT (1957) also revived that name.

Regret to say, however, this genus name is preoccupied by *Sphaerella* SOMMERFELT 1824 (= *Haematococcus* AGARDH) of the Flagellata (Protozoa) and also by *Sphaerella* CONRAD 1838 and 1860 of the fossil Lamellibranchia (Mollusca), as pointed out by NEAVE (1940, vol. IV, p. 238 and CHERBONNIER, 1958). Another genus name *Cladiella* erected by GRAY (1869, p. 125) is thus a subjective junior synonym of *Sphaerella* GRAY.

GRAY erected *Cladiella* for two species *Lobularia sphaerophora* EHRENBERG 1834 and *Alcyonium brachycladium* DANA 1846 (= *Lobularia brachyclados* EHRENBERG 1834), but failed to indicate a type species. Therefore, I hereby propose to revive this *Cladiella* as the next available genus name and to designate *L. sphaerophora* EHRENBERG as the type of *Cladiella*. For this genus MACFADYEN's definition of the genus *Microspicularia* (1936, p. 29) is wholly applicable.

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